

The Total Army School System

Recommendations for Future Policy

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PREFACE

Beginning in FY94, the U.S. Army launched a series of initiatives to streamline and consolidate its extensive school system, which includes training institutions that serve the Active Component (AC) and the Army's two Reserve Components (RC)—the Army National Guard (ARNG) and the U.S. Army Reserve (USAR). The aim has been to develop a Total Army School System (TASS) that is more efficient and integrated across the AC and RC.

During this reorganization, the Army asked the RAND Arroyo Center to provide an objective assessment of the performance and efficiency of the existing system, including a regional prototype in which the organizational changes were initially implemented. This document summarizes the key findings and recommendations in RAND's assessment, which were presented to General Officer Steering Committees governing the TASS. The findings are presented in full detail in a series of companion reports: *Assessing the Performance of the Army Reserve Components School System* (RAND MR-590-A), *Training Requirements and Training Delivery in the Total Army School System* (RAND MR-928-A), and *Resources, Costs, and Efficiency of Training in the Total Army School System* (RAND MR-844-A).

This report documents the key findings and recommendations for historical purposes. Many of the recommendations were adopted and are so noted in this report. Other recommendations, also noted here, have not yet been adopted. Hence these results can still be used to guide the further development of the TASS.

The research was sponsored by the Deputy Commanding General, U.S. Army Training and Doctrine Command, and was conducted in

the Manpower and Training Program of RAND Arroyo Center. The Arroyo Center is a federally funded research and development center sponsored by the United States Army. This research will be of interest to policymakers responsible for defense manpower and training and for Active and Reserve Component issues.

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SUMMARY

The United States Army operates an extensive system of schools and centers that provide military education and training to soldiers in the Active Component and the two Reserve Components, the U.S. Army National Guard and the U.S. Army Reserve. This system includes Reserve Component (RC) training institutions that provide reclassification training for enlisted personnel who change military occupational specialties and leader training for both commissioned and noncommissioned officers.

As the result of an assessment conducted in the early 1990s, the Army and other agencies concluded that the Reserve Component training system was inefficient and difficult to manage and that the quality of training was inconsistent. Concurrently, defense downsizing and resource reductions were making it necessary to shrink the training infrastructure and reduce training costs.

In 1992, the Chief of Staff of the Army asked the Training and Doctrine Command (TRADOC) to develop plans for consolidating facilities and raising standards. The Army's long-term goal was to establish a Total Army School System (TASS) to train both the Active and the Reserve Components. The resulting program centered on a regional system of RC schools, established first as a prototype in the southeastern United States (North Carolina, South Carolina, Georgia, and Florida) and intended to be extended nationwide after a suitable period of testing.

PURPOSE OF THIS RESEARCH

Given the magnitude of the changes implied in the restructuring initiatives, the Army asked RAND Arroyo Center to conduct an independent assessment of school system operations. Our analysis, carried out over a period of two years, provided information to guide the development of the prototype RC regional school system, and it helped identify deep-seated, systemic issues the Army needs to address to improve the performance and efficiency of the school system as a whole.

KEY RECOMMENDATIONS TO THE ARMY

We identified three fundamental areas where organizational changes could make a difference. We also recommended that the Army implement a monitoring system to track changes and improvements in these areas.

Meeting Training Requirements

This area focuses on the importance of more accurately determining how many unit personnel require training and then scheduling and conducting courses in a way that produces the desired numbers and types of graduates. The Army can accomplish this goal by

- reducing the demand for training by lowering the rate of job turnover and personnel attrition;
- improving forecasting methods; and
- making better use of available capacity by using the reservation system more efficiently, ensuring that key resources—including instructors—are available, and reducing the number of unused quotas.

Using Resources Efficiently

Because training costs are largely fixed, only modest dollar savings can be achieved through reorganization. Thus, the efficiency with which manpower is used to deliver training becomes a crucial factor. In this area, the Army should

- achieve economies of scale by increasing student load, thereby reducing instruction costs per individual;
- improve the match between instructors and requirements to avoid oversupplies in some areas and shortages in others;
- customize the Table of Distribution and Allowances (TDA) for each school brigade and battalion in each region, and give schools more flexibility to make instructor substitutions when necessary;
- provide sufficient resources to adapt to regional changes in demand; and
- continue to consolidate annual training locations.

Improving the Quality of Training

Schools are better able to train students to established standards when they have correct and up-to-date training products, qualified instructors, and appropriate support on hand—e.g., equipment, ammunition, facilities. Thus, it is highly important that the Army

- accelerate development of the Total Army Training System (TATS) courseware;
- leverage Reserve Component assets to develop and deliver courseware; and
- strengthen procedures to identify and locate appropriate training support, especially references, equipment, and training aids.

Implementing a Monitoring System

Our research indicated a need for ongoing monitoring and assessment to benchmark school performance and to provide a basis for goal-setting and continuous improvement. The instruments we developed for our evaluation of the TASS could be adapted for this purpose. The Army's own data-collection systems—e.g., the Army Training Requirements and Resources System (ATRRS)—could record and display necessary information, although in some cases, new data should be collected by appropriate Army agencies. At a minimum, such data should include

- a comparison of current training requirements versus school quotas for reclassification training and NCO education;
- quota fill rates and the number of graduates of these courses;
- efficiency of school brigades and battalions, which is calculated by comparing the number of student mandays versus the number of school mandays used to “produce” this output (including both instructors and school staff); and
- implementation status of quality improvement initiatives (production of Total Army system courseware, school accreditation, instructor certification, and Title XI and TDA fill).

These measures should be used for oversight by the Total Army School System General Officer System as a means to track improvements, focus attention on problems encountered in meeting objectives, and identify appropriate policy solutions. Currently, the Army is monitoring quota execution, and it keeps track of quality improvement initiatives. However, the other information described above is not routinely monitored.

ACRONYMS

AC	Active Component
ADSW	Active Duty for Special Work
ADT	Active Duty for Training
ANCOC	Advanced NCO Course
ARNG	U.S. Army National Guard
AT	Annual Training
ATRRS	Army Training Requirements and Resources System
BNCOC	Basic NCO Course
CA	Combat Arms
CS	Combat Support
CSS	Combat Service Support
DAIG	Department of the Army Inspector General
DMOSQ	Duty MOS Qualified
HS	Health Services
IDT	Individual Duty for Training
MOS	Military Occupational Specialty
MOSQ	MOS Qualified
NCO	Noncommissioned Officer

NCOES	NCO Education System
O&S	Operations and Support
PLDC	Primary Leadership Development Course
POI	Program of Instruction
RC	Reserve Component
RCE	Regional Coordinating Element
SIDPERS	Standard Installation/Division Personnel System
TASS	Total Army School System
TATS	Total Army Training System
TDA	Table of Distribution and Allowances
TDY	Temporary Duty
TRADOC	U.S. Army Training and Doctrine Command
USAR	U.S. Army Reserve
USARC	U.S. Army Reserve Command

INTRODUCTION

The U.S. Army runs an extensive system of schools and centers that provide military education and training to soldiers in both the Active Component (AC) and the Reserve Components (RC), the latter comprising the U.S. Army National Guard (ARNG) and the U.S. Army Reserve (USAR). Within this system, Reserve Component Training Institutions (RCTIs), schools funded and managed by the ARNG and the USAR, conduct a variety of school courses aimed primarily at two types of training. The first is reclassification training for enlisted personnel who change military occupational specialties (MOS). This training makes soldiers duty MOS qualified (DMOSQ), an essential characteristic for deployment and effective performance in a unit. The second is leader training for officers and for noncommissioned officers (NCOs).

CONCEPT FOR A TOTAL ARMY SCHOOL SYSTEM

In the early 1990s, building on experience gained from Operations Desert Shield and Desert Storm, the Army and other agencies undertook efforts to assess and enhance the readiness of RC personnel and units. Their findings suggested that the RC training system was inefficient and difficult to manage and that the quality of training was inconsistent.¹ At the same time, defense downsizing and reductions in available resources established a need to shrink the training infrastructure and reduce training costs.

¹See, for example, Department of the Army Inspector General (DAIG), *Special Assessment of Reserve Component Training*, Washington, D.C., January 11, 1993.

In 1992, the Chief of Staff of the Army asked TRADOC to develop plans for consolidating training facilities and improving training standards. The long-term goal was to establish a Total Army School System (TASS) that would have fully accredited and integrated AC/ARNG/USAR schools to provide standard individual training and education for all components of the Army.

The resulting program, which evolved into a TASS prototype, centered on four key principles:

- **Regionalization.** To facilitate training management, the plan divided CONUS schools into geographic regions.
- **Integrated school system management.** A TRADOC element (currently the Deputy Chief of Staff for Education) would perform operation and oversight functions across the entire system. Regional coordinating elements would control institutional training and perform quality assurance functions in their respective geographic areas.
- **Functional alignment of RC instruction with appropriate proponent schools.** RCTIs would no longer be responsible for the full array of Army course offerings across many areas of specialization. Instead, each would focus on one functional area, and appropriate oversight and technical assistance would be provided by the AC school specializing in that area.
- **Quality assurance.** Programs were established to accredit institutions, certify and recertify instructors, and improve and standardize training.²

In 1994 the Army initiated a test of a prototype regional school system in the southeastern United States—Region C, comprising North Carolina, South Carolina, Georgia, and Florida—with the intention of broadening the prototype nationwide after a suitable period of testing.

²The principal features of the reorganization included regional management of training, consolidation of training institutions, specialization of school missions, enhanced quality assurance programs, and “functional alignment” between RC schools and AC proponent training institutions. For a more complete description, see Winkler et al. (1996).

RESEARCH APPROACH

Given the magnitude of the changes implied in the restructuring initiatives, several Army agencies requested an independent, objective assessment of school system operations to provide information relevant to the future development of TASS. The Army asked the RAND Arroyo Center to conduct this assessment, paying particular attention to the effects of changes embodied in the regional prototype.

We collected quantitative data from Region C and from the overall system, and we analyzed the performance of both.³ Carried out over a period of two years, our assessment provided information for guiding the development of the prototype. More important, it helped identify deep-seated, systemic issues the Army needs to address to improve the performance and efficiency of the school system as a whole. This report contains our recommendations for ways to accomplish this goal.

ORGANIZATION OF THIS REPORT

We identified three fundamental areas of school performance where we could measure the effects of organizational changes. These areas provide a framework for assessing school system performance and monitoring improvements over time.

The first key assessment area concerns the extent to which the school system is successful at meeting training requirements—i.e., accurately determining the number of unit personnel who need training and then meeting those needs by scheduling courses and conducting them in a way that produces the desired number and types of graduates. These issues are addressed in Chapter Two.

Chapter Three focuses on the second area, efficient use of resources, where improvements can be made by reducing duplication, making better use of capacity, and lowering costs. Quality of training is the subject of Chapter Four. This involves making schools better able to

³We used national-level data wherever possible. However, for certain measures, new data had to be developed. These were obtained from a comparison region—Region E, comprising Minnesota, Wisconsin, Illinois, Indiana, Ohio, Iowa, and Michigan. For a detailed discussion of the research methodology, see Winkler et al. (1996).

train students to established standards by having correct and up-to-date training products, qualified instructors, and appropriate support on hand (e.g., equipment, ammunition, facilities).

Our research also indicated a need for monitoring and assessment to benchmark school performance and to provide a basis for continuous improvement. In Chapter Five, we offer suggestions on how to establish a monitoring system that would meet this need. Finally, Chapter Six provides a brief overview of steps the Army has already taken to enhance school system performance and indicates where we believe more work remains to be done.

MEETING TRAINING REQUIREMENTS

Ideally, RC units should be fully manned with properly trained individuals. The reality is that many positions are either vacant or held by individuals not qualified to serve in the specific duty position.¹ There are many reasons for this. Certain positions may be difficult to fill, given an RC unit's need to recruit from the local area. Promotions and unit conversions create substantial turnover in entry-level and leadership positions. Newly assigned soldiers may require lengthy periods to complete training or retraining for the position. But whatever the reason, the result is that soldier deployability and unit readiness are degraded.

Our analysis showed that sizable numbers of drilling reservists were not qualified for their duty position and/or had not fully completed the Noncommissioned Officer Education System (NCOES) courses required for their grade.² At the same time, we noted that RC schools provided student training slots (quotas) for only a fraction of the requirement, and many of these quotas went unused. Hence, to improve the school system's ability to meet its training requirements, we recommended that the Army take the following steps to address the problem from both the demand (requirements) and supply (capacity) sides.

¹See, for example, Buddin and Grissmer (1994) and Sortor et al. (1994).

²Primary Leadership Development Course (PLDC), Basic Noncommissioned Officer Course (BNCOC), or Advanced Noncommissioned Officer Course (ANCOC).

IMPROVE FORECASTING METHODS AND ADJUST CAPACITY

Currently, the Army forecasts its training requirements several years in advance. Adjustments to school quotas are made prior to the year of execution (e.g., through Training Resource Arbitration Panels), but this practice can still lead to shortages and misallocations of training resources to meet current requirements.

The Army needs to put policies and programs in place to better forecast training requirements and, subsequently, to shift resources during the year of execution from parts of the training system with lesser need to parts with greater need. In our research, we found that accurate near-term estimates of training requirements could be developed using Army personnel management databases (e.g., SIDPERS).³ Such databases can use historical experience to make short-term forecasts of the number of soldiers needing training in various career management fields and MOSs.

We recommended that Army organizations responsible for managing training requirements should develop and apply such tools to examine short-term training demand and then adjust allocations and redirect resources to meet these demands in a broader and more systematic fashion than is customarily done.⁴ This could imply major shifts in training priorities—for example, away from NCOES leadership training, where requirements are falling dramatically, to DMOSQ training in Army MOSs in which the shortfall between capacity and requirements is especially large.

³Standard Installation/Division Personnel System. See Winkler et al. (forthcoming 1999), for evidence demonstrating the validity of SIDPERS data for estimating qualification levels of soldiers in units.

⁴This recommendation was adopted by the ARNG, which developed the Army Training Requirements and Resources System (ATRRS) Funding Allocation Model (AFAM) to determine funds to distribute to states based on training needs. The model includes a by-name identification of individuals needing training, based on a comparison of their primary and duty MOS. This model could be extended to encompass soldiers in USAR units and provide an integrated picture of total training requirements in the RC. To date, however, this has not been done.

REDUCE DEMAND FOR TRAINING

Beyond improving accuracy, the Army should also make efforts to reduce the size of training requirements. The Army's "select-train-promote" policy is one example of how to reduce training requirements, in this case by limiting NCO education to only those NCOs selected for promotion. By extension, priorities could be established for determining which soldiers should be sent to reclassification training. Such training might be limited, for example, to soldiers in selected "shortage" MOSs or those with a minimum remaining service obligation. Remaining soldiers might be sent to training as resources are available, or they might be qualified through other means (e.g., structured on-the-job training).

Another step that can be taken is to reduce the "personnel churn" in which MOS-qualified soldiers leave a duty MOS for which they are qualified to move to another MOS for which they are not qualified. Reducing attrition can also reduce the need to train replacement personnel. Our results demonstrate that most of this turbulence stems from individual decisions, and is not driven by force-structure changes. Thus, modest "stay-in-place" incentives could be effective in reducing training requirements and raising DMOSQ rates.⁵

Using a personnel-flow model developed for this study, we examined the effects of such incentives, assuming they could reduce job movements by 50 percent and attrition by 25 percent, as estimated in an earlier RAND Arroyo Center study.⁶ Such reductions in turbulence would lower DMOSQ training requirements by nearly 21,000 soldiers and raise the DMOSQ rate from 74.8 percent to 80.4 percent.⁷ Moreover, initial entry training requirements could decrease by 6,500 soldiers. The annual cost associated with training this

⁵Understanding the actual effects of turbulence and attrition reduction strategies requires testing those strategies in a controlled setting that will allow the costs and savings to be systematically evaluated. See Orvis et al. (1996), which recommended bonuses to reduce both turnover and attrition (\$250 and \$900 per soldier, respectively) and proposed a pilot test to determine the effects of the bonuses. To date, however, such programs have not been attempted.

⁶See Orvis et al. (1996).

⁷These numbers are based on DMOSQ rates observed in fiscal year 1994 and an RC end strength of 475,000 soldiers.

number of personnel is nearly \$190 million.⁸ Thus, the USAR and ARNG should consider implementing stay-in-place programs, at least on a trial basis.

MAKE BETTER USE OF AVAILABLE CAPACITY

During the period of RAND's assessment, the RC school system was wasting about a third of the training seats (quotas) allotted to deliver training, both within the prototype and throughout the entire system. This is particularly troublesome given the large gap between training requirements and available training seats (Figure 2.1).

One reason quotas are being lost is that unit personnel responsible for making and monitoring reservations for training seats are not

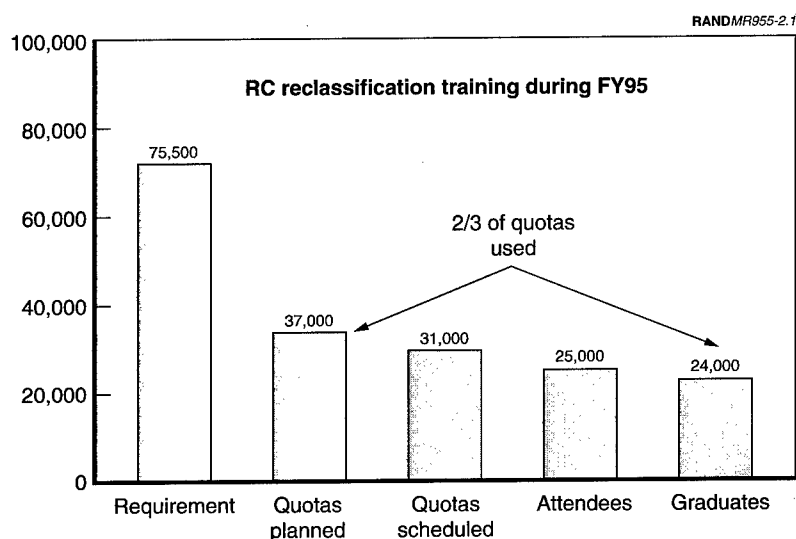


Figure 2.1—Available Quotas Are Not Fully Utilized

⁸These savings, in FY94 dollars, assume that the average course costs per student for MOS reclassification training are about \$4,900 in the RC. For IET, the savings assume an average course cost of approximately \$13,900 (\$6,148 for basic training plus \$7,729 for advanced individual training). See Orvis et al. (1996).

fully proficient at using the Army's reservation system.⁹ Hence, they are not making needed reservations. Responsible Army agencies—including the U.S. Army's Office of the Deputy Chief of Staff for Personnel, the U.S. Army Reserve Command, and the Army National Guard—have provided additional training and assistance in using ATRRS. These efforts should be maintained and expanded.

Quotas are also lost when key resources needed to conduct a course are not available, causing the course to be cancelled. These resources include qualified instructors and the equipment and facilities (identified in the course's program of instruction) necessary for conducting the course to Army standard. This problem is particularly acute in weekend drill training,¹⁰ but it exists elsewhere as well.

Organizations within the TASS responsible for coordinating training, such as TRADOC's Regional Coordinating Elements (RCEs), can help ensure that key resources are located and available. Policies that govern instructor certification and management are crucial for ensuring that qualified instructors in sufficient numbers are available throughout the school system.

Another reason why quotas are lost is simply that some soldiers who make reservations do not show up. It should be expected that bad health, family problems, and unanticipated conflicts with civilian employment can sometimes interfere with attendance. However, prompt notification of cancellations can permit soldiers on wait-list status to use the vacant seats. The Army has taken steps to reduce the no-show rate; no-shows still remain a problem, however, as does the number of undersubscribed (unfilled) seats.

One way of alleviating the problem of unused quotas is to place greater command emphasis on sending soldiers needing training to school. Substantial improvements might occur if commanders are given incentives for using reservations efficiently (i.e., filling reservations that are made or promptly cancelling them if necessary).

Quota-management policies are also important in this regard. The Army could consider selective overbooking, as is done in the airline

⁹Army Training Requirements and Resources System (ATRRS).

¹⁰Individual duty for training (IDT).

industry to ensure that planes fly at full capacity. Faster reassignment of quotas from units that are not filling them to others that will could also help. Currently, the Army prefers to take steps to ensure fill of existing training seats through confirmed reservations and more realistic, attainable training requirements. In addition, they are seeking to better manage soldiers who are wait-listed through better notification and confirmation of attendance when openings occur.

USING RESOURCES EFFICIENTLY

In 1993, the Department of the Army Inspector General (DAIG) published a report on RC training that contained several key observations about resources and costs in the RC school system:¹

- The RC school system contains a large number of schools (perhaps more than are needed) with underutilized capacity and apparent duplication of course offerings.
- RC schools make extensive use of borrowed resources, including manpower and equipment, thus requiring extensive staff time to coordinate.
- No mechanism exists for systematically tracking all the resources (organic and borrowed) used by RC schools. Therefore, it is impossible to determine total resource use, total cost, and relative efficiency.
- Without some handle on total resources and costs, the link cannot properly be made—or managed—between resources on the one hand and efficiency, requirements, and training quality on the other.

We determined that there are four primary categories of resources needed by school organizations: school staff, students, mission operations and support (O&S), and installation support.² Our analysis

¹Department of the Army Inspector General (DAIG), 1993.

²“School staff” includes the military and civilian pay and allowances of RC school instructors and support staff, retirement accrual associated with the pay, travel costs

demonstrated that school manpower resources dominate the cost of training. Figure 3.1 shows that in fiscal year 1995, manpower resources (the top two bars) accounted for 87 percent of the \$81.2 million total training costs in RC schools in Regions C and E. In addition, as shown by the divisions within the bars, most training costs in fiscal year 1995 were still “fixed” in that they occurred within the context of the 39-day-per-year training allotment associated with all Army authorized end strength. Discretionary dollars—that is, extra funding to augment training in RC schools—still contribute relatively little to the total cost of training, overall about 19 cents on the dollar.

The implication of these findings is that, given the nature and magnitude of the fixed costs, reorganization will lead to very modest dollar savings. Therefore, the key issue is the *efficiency* with which manpower is used to deliver training. We believe there are several strategies that, undertaken separately or in combination, can substantially increase school efficiency. Those strategies are described below.

ACHIEVE ECONOMIES OF SCALE BY TRAINING MORE SOLDIERS

Economies of scale exist because of the relatively stable size of the staff needed to conduct training—i.e., doubling the student load does not double the size of the support staff requirement. Therefore, as schools train more students, they are able to spread the instruction costs over more units of output.

to the training site, and (when allowed) per-diem costs associated with travel. A small portion of travel costs to training sites is included under temporary duty (TDY), which is incorporated here in the “mission O&S” category.

The “students” category includes the pay and allowances of students while attending a course, the retirement accrual associated with the pay, travel costs to the training site, and (when allowed) per-diem costs associated with travel.

“Mission operations and support (O&S)” includes the supplies and materials associated with the implementation of training, such as petroleum, oil, and lubricants and the self-service supply center and TDY resources associated with schools.

“Installation support” includes the resource requirements of facilities (both manpower authorizations and budget dollars). This covers both base operations and real property maintenance activities.

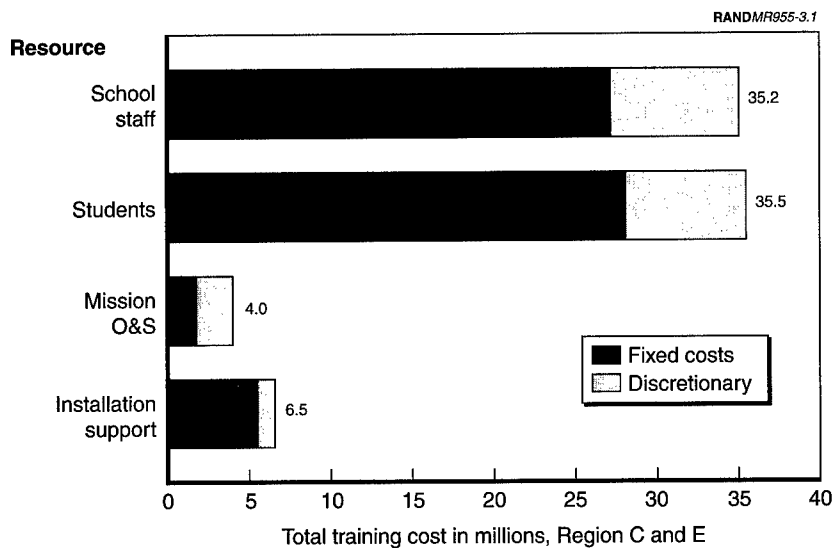


Figure 3.1—Manpower Resources Drive the Total Cost of RC School Training

We measured school efficiency by calculating total school mandays (including instructor and staff, organic, and borrowed) per 100 student days they produce. Figure 3.2 shows the efficiency curve for the Combat Service Support Brigade in the prototype Region C during fiscal year 1995.³ The planned student load (32,275) is 50 percent higher than the actual student load (21,800). The planned load is considered achievable because it represents the level of operation the schools agreed to when allocations were assigned, and raising output to that level produces an efficiency gain of 10 percent.

³Other brigades in Region C show comparable results. In fact, many of them could realize even greater economy-of-scale gains than the CSS Brigade because they are smaller organizations, which begin at smaller student loads where the efficiency curve is steepest. Moreover, we believe that the Region C experience represents what can be reasonably expected from the system as a whole.

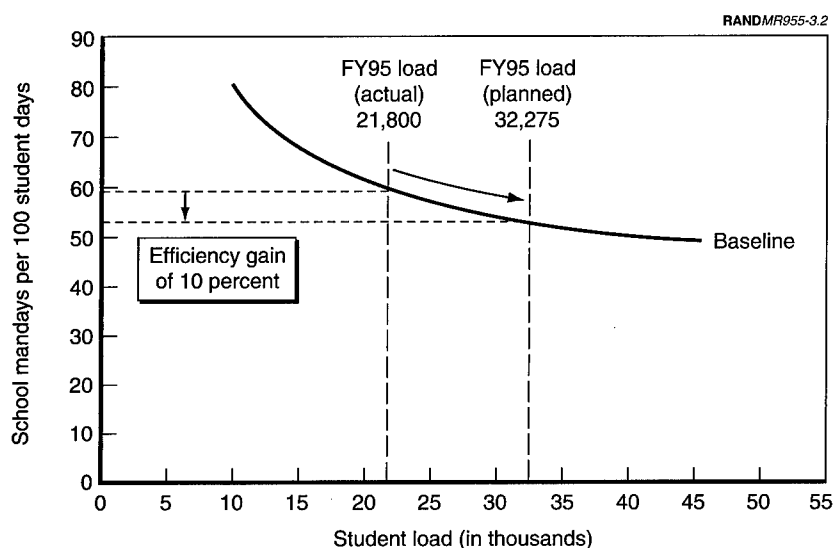


Figure 3.2—Efficiency Improves as More Soldiers Needing Training Are Sent to School (Combat Service Support Brigade, Region C)

It should be noted that increasing student load does more than improve efficiency. It also increases the number of individuals qualified to serve in their specific duty positions, as discussed in Chapter Two. Thus, it is doubly important for the RC schools to make effective use of available capacity.

IMPROVE THE MATCH BETWEEN INSTRUCTORS AND REQUIREMENTS

Mismatches between qualified instructors and training requirements result in an oversupply of instructors in some areas and a shortage in others. These mismatches can be traced in part to the erroneous predictions of student input previously discussed. Our research suggests that the less allocations change, the greater the ability of the schools to have the right instructors on staff when classes begin, once again underscoring the importance of accurate and timely forecasting.

But going beyond forecasts, schools could be supplied with other information that would lead to better instructor-requirement matches—for example, knowing the location of students would help schools schedule IDT courses in the most appropriate places. This information, which was formerly transmitted through a now-defunct process, could come from ATRRS.⁴ However, this information is not yet available.

Schools would also benefit from being able to obtain information about instructors outside their own organization (e.g., through a centralized instructor registry that identifies and locates individuals who are qualified to teach specific courses). Such information would help schools identify, recruit, and train qualified instructors as they are needed, and in conjunction with information on the location of students, it could help them determine the optimal locations for conducting IDT.⁵

REFINE TDAs AND MAKE THEM MORE FLEXIBLE

Further gains in efficiency will come from continuously reviewing the composition of school staffs to ensure that they reflect changes in requirements and forecasts of students requiring training. The need for instructors should be derived from requirements, and TDAs should be “customized” for each school brigade and battalion in each region. This implies greater variability in school TDAs than currently exists. In addition, given the current uncertainties in estimating the demand for training to that level of detail, TDAs may require more frequent revision than they currently receive, shifting personnel authorizations from areas of lesser need (e.g., common leader training) to areas of greater need (e.g., DMOSQ). Pursuing this strategy may also involve giving the schools more flexibility in making instructor substitutions when the balance of instructor needs suddenly changes.

⁴This information could be made available using tools such as the ATRRS Funding Allocation Model (AFAM), which has been developed for the Army National Guard.

⁵Using the results of this research, the Office of the Deputy Chief of Staff for Personnel developed and implemented an Instructor Management Module in ATRRS to provide such management capability.

ENSURE RESOURCES ARE ADEQUATE TO SUPPORT CHANGES IN THE TRAINING SYSTEM

Another way to increase school responsiveness and flexibility, especially when predictions of student load are uncertain, is to provide schools with sufficient supplemental staff and instructor support resources to adapt to regional changes in the demand for training. In the steady state, TDA instructor resources should be aimed at the low end of expected inputs, and temporary surges should be handled with active duty for special work (ADT or ADSW) resources. During transition periods, as further consolidation and regionalization may be accomplished, extra resources for staff will be required to provide adequate TDY funds and establish cost-effective work procedures.

CONTINUE TO CONSOLIDATE ANNUAL TRAINING LOCATIONS

Redundancy in the training system duplicates effort and wastes support resources.⁶ However, consolidating a dispersed system of training locations involves a tradeoff: Support manpower can be reduced if training is conducted at fewer locations, but a reduction in the number of training sites means that many students and instructors must travel longer distances, thereby increasing travel costs and perhaps causing a drop in attendance.

Our analysis suggested that if training sites for high-support courses are consolidated, both within a given region and across regions, net efficiencies will accrue in the annual training domain. These findings support the ARNG initiative of creating regional sites for the annual training phases of high-support combat arms courses, and they suggest that other courses might benefit from consolidation as well.

However, our data indicated that weekend mode (IDT) training does not similarly benefit from consolidation, even if the resulting classes are small enough to be taught by a single instructor. Most under-

⁶The movement toward the new school system in Region C was partially motivated by this concern; and, indeed, specialization induced by the new Region C school system has already reduced the number of annual training locations by 41 percent.

sized IDT classes occur within low-density MOSs, where only one or a handful of classes is being taught within a region. Thus, consolidation would produce negligible savings in instructor costs. Likewise, because support costs for weekend training are typically much lower than for annual training, support cost savings would be too small to justify the increased travel expense that consolidation would entail.⁷

Overall, we concluded that a balance in the number of training locations is required because efficiency can be negatively affected if consolidation goes too far. Thus, before taking action on specific courses, decisionmakers need to examine on a course-by-course basis the tradeoff between training support costs and travel costs within regions.

⁷This report does not address the potential savings that might result from increased use of distributed training methods—e.g., distance learning.

IMPROVING THE QUALITY OF TRAINING

An important impetus for restructuring the TASS was a widespread perception that the quality of training in RC schools was highly variable. The DAIG's special assessment of RC schools asserted that soldiers trained in RC schools were not always trained to the same standards and that the AC did not perform adequate quality assurance in overseeing RC training. The DAIG assessment further noted that, compared to AC courses, many of the courses in RC schools had a reduced number of tasks and that much RC courseware was outdated. It also stated that training conducted in RC schools was often diminished by lack of equipment, poor facilities, and unqualified instructors.¹

Our assessment focused on three elements of quality: courseware, training support, and instructor qualifications. For each, we attempted to determine whether the element was present in sufficient quantities and adequate for delivering training to Army standards. We aimed to measure the magnitude of problems in these areas and to determine in which types of courses the problems were most severe—e.g., AT versus IDT, and leadership versus technical courses.

To analyze these issues, we obtained quantitative data from questionnaires given to RC school commanders and instructors in Region C and in a comparison region (Region E). We sent surveys to commanders of all RC schools conducting training in both regions. During our baseline assessment (fiscal year 1994), we surveyed instructors in a sample of eight courses, selected to represent the range

¹See Department of the Army Inspector General (DAIG) (1993).

of courses offered in RC schools, obtaining responses from 120 instructors across both regions.² In fiscal year 1995, we were able to expand greatly the number of instructors surveyed in both regions, obtaining data from 611 instructors teaching 50 different courses in both regions, including the eight courses examined in the baseline assessment.

TRAINING QUALITY PROBLEMS

The discussion in this section is drawn from the full sample of 611 instructors surveyed in fiscal year 1995. With few exceptions, as discussed below, these results replicated and reinforced the findings reported in our baseline assessment in fiscal year 1994 (Winkler et al., 1996). Respondents reported much greater problems with courseware than with the other elements of quality. The overall results for fiscal year 1995, shown in Figure 4.1, were typical.³ Thirty-six percent of AT instructors and 28 percent of IDT instructors rated courseware as inadequate. In comparison, problems related to training support—most commonly with equipment, ammunition, and training aids—were identified by 16 percent of AT instructors and 21 percent of IDT instructors.⁴

According to survey results, the least problematic elements of training quality were instructors' qualifications. Results indicated that among both AT and IDT instructors, 95 percent were fully qualified in the MOS they were teaching and had completed the prescribed instructor training course (ITC). Instead, supply of qualified instructors was the greater problem. RC schools commanders reported more problems with locating qualified instructors (29 percent) than with the knowledgeability of those they have (11 percent).

²For details of our sampling and data-collection methodology for assessing quality of training, see Winkler et al. (1996).

³These results portray the average percent of items rated by instructors as "somewhat" or "very" inadequate related to courseware and training support, respectively. Each set consists of seven items.

⁴Survey responses from commanders of RC schools show similar results.

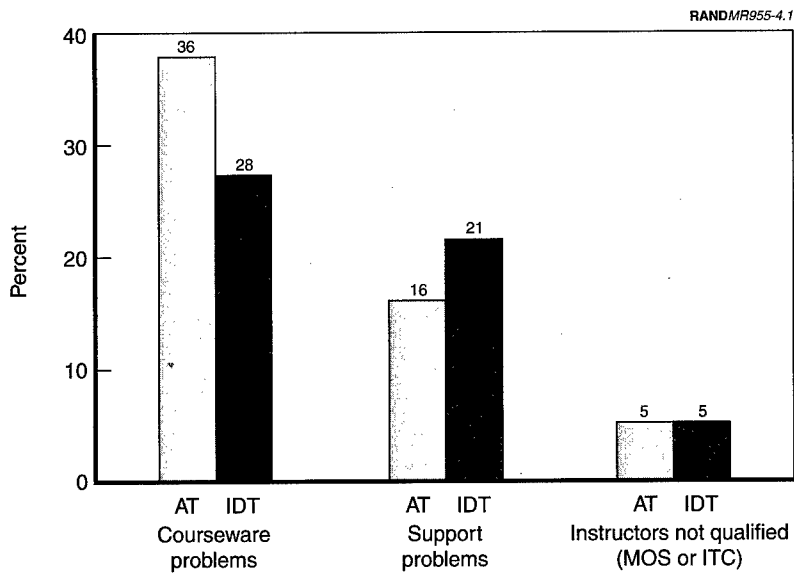


Figure 4.1—Courseware Problems Outweigh Other Problems with Training Quality

Figure 4.2 provides additional detail about specific types of courseware problems, as reported in instructor questionnaires. In fiscal 1995, as in our baseline analysis, the most frequent complaint of instructors was that courseware was “incomplete” or “outdated.” In contrast, fewest problems were reported with test materials or with the appropriateness of the tasks contained in the courseware.

Figure 4.2 also shows that in fiscal year 1995, problems with courseware were uniformly more of a concern for the AT portion of courses than for the IDT portion. This represented a change from fiscal year 1994, when more problems were reported with IDT courseware than with AT courseware.⁵

⁵This change seems to have resulted from characteristics of the sample in fiscal year 1995 as compared to fiscal year 1994. The instructor survey in fiscal year 1995 covered a wider set of courses and a much larger sample of instructors.

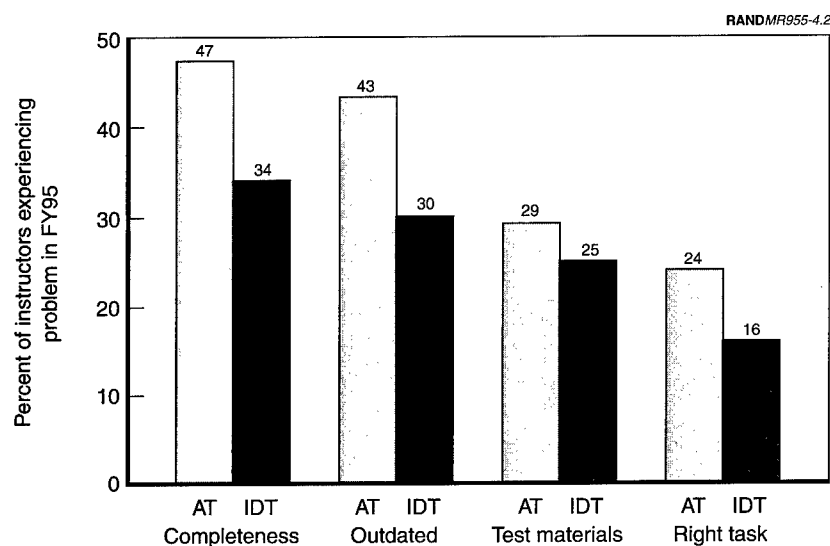


Figure 4.2—Completeness and Currency Are Larger Issues Than Courseware Content

ACCELERATE DEVELOPMENT OF TOTAL ARMY TRAINING SYSTEM (TATS) COURSEWARE

We recommended that the most important way to improve training quality is through adequate, up-to-date courseware that is efficiently distributed—i.e., by a system that moves electrons instead of paper. The Army responded by developing Total Army Training System Courseware (TATS-C), which creates programs of instruction with the same tasks and standards for both AC and RC personnel. The Army also began to improve the distribution of courseware and instruction by capitalizing on new educational technologies and techniques (e.g., through distance learning).

It will also be necessary to resolve the conflict between content and length of training, given existing definitions of a qualified school graduate and the limited time available for training RC members (39 days per year compared to no limit in the AC). This is a difficult problem, and if training methods differ to accommodate student

availability, the Army will need to ensure that instructional products and methods are equally effective for both groups.

OBTAIN RESOURCES AND LEVERAGE AC/RC ASSETS TO DEVELOP AND DELIVER COURSEWARE

Given the number of courses taught by the Army and the effort that will be required to convert existing courseware to TATS-C, the Army should ensure that adequate resources are available first for improving the quality of courseware and the delivery system and, later, for maintaining and continuing to modernize them. Conversion is an ongoing effort with high visibility and is moving forward.

We also recommended that the Army leverage existing resources across components, by involving the RC more heavily in developing TATS courseware, which the Army has done. And because the effort required to convert courseware exceeds available resources, the Army could consider shifting personnel and funding resources from activities that this research has demonstrated to be less necessary, such as monitoring instructor qualifications.

SOLIDIFY SUPPORT ARRANGEMENTS

Because instructors still report problems with training support and because the problems are more pronounced in IDT, we recommended that procedures be strengthened to identify and locate necessary training support, especially references, equipment, and training aids. The present procedure (156-R) used by U.S. Army Forces Command to identify equipment needed for annual training could serve as a model.

IMPLEMENTING A MONITORING SYSTEM

To achieve continuous improvement in the RC school system, decisionmakers must be able to measure performance and efficiency on an ongoing basis. Thus, as the school system takes hold in other regions, our final recommendation is that the Army implement a quantitative monitoring system to benchmark current performance and efficiency, set goals and objectives, and regularly measure progress. Use of such a monitoring system would facilitate oversight, help focus attention on problems encountered in meeting objectives, and identify appropriate solutions.

MONITOR TRAINING REQUIREMENTS AND CAPACITY

Data from SIDPERS and ATTRS can be used to determine and display the match between training requirements and training capacity and to track quota utilization. Figure 5.1 illustrates the kind of information such a monitoring system might produce. It reflects data from fiscal year 1996—the first year in which the prototype began to extend into additional regions—to examine training requirements for DMOSQ and NCOES in each functional area across the RC training system. In this figure, the MOS-specific portions of NCOES (Phase 2) are combined with DMOSQ requirements to indicate total training demand in each functional area.

These numbers are useful for overall sizing purposes across the RC system. Moreover, similar information can be displayed separately for each region to gain insight into how training requirements in the various functional areas are geographically dispersed. The requirements can then be compared to the number of programmed quotas

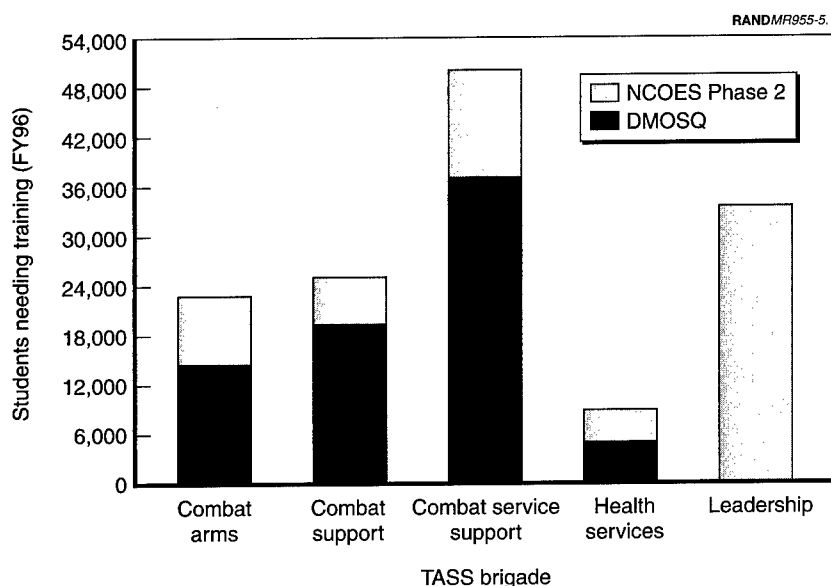


Figure 5.1—Determining Training Requirements in Functional Areas Across the RC System

to determine the degree of mismatch, if any, between requirements and school training capacity.

Figure 5.2 shows the overall relationship between training requirements and quota availability at the start of fiscal year 1996. As shown in the figure, DMOSQ quotas were available for 45 percent of soldiers shown in the personnel system as non-DMOSQ, while NCOES quotas were available for 60 percent of NCOs shown as not completing the NCOES required for current or impending grade. Similar data could be obtained for each functional area or for each geographic region to provide an initial benchmark against which to measure improvement.

Figure 5.3 displays quota utilization during fiscal year 1996. The quota utilization rate ranged from a high of 78 percent in Region D (Alabama, Kentucky, Mississippi, and Tennessee) to a low of 48 percent in Region E (Illinois, Indiana, Iowa, Ohio, Michigan, Minnesota, and Wisconsin). The purpose of such comparisons is not to single

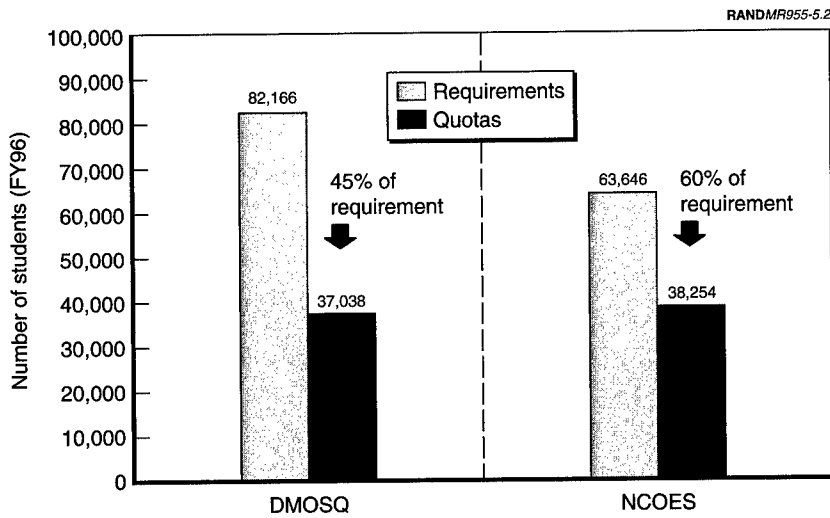


Figure 5.2—Comparing Training Requirements with School Capacity

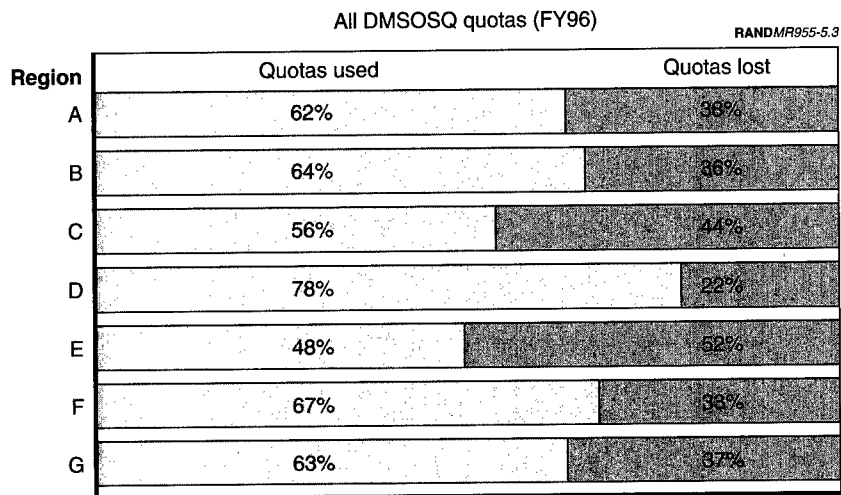


Figure 5.3—Monitoring Quota Utilization by Region

out or penalize regions that appear to be performing less well than others. Rather, it is to demonstrate existing variability, identify problems that may be systemic, and provide a basis for goal-setting in each region of the country.

ASSESS EFFICIENCY

In addition to monitoring how well school systems meet training requirements, we further recommend that the Army implement a monitoring system for tracking resources, costs, and efficiency of training. Because existing data systems did not supply all the required data in the correct format, the Arroyo Center devised a number of data-collection instruments to use in its two-year evaluation of the TASS. We have drawn from those instruments to recommend a smaller set of data to be collected on an ongoing basis.¹ In this approach, RC schools, command organizations, and instructors would help obtain data on funding and on sources and disposition of student and school manpower. At least some of the information could be routinely collected by adding a resource screen to the ATRRS system.

Using our primary measure of school efficiency—the number of school mandays needed to support 100 student days of training—Figure 5.4 compares the relative efficiency of the functional brigades in Region C during fiscal year 1995. Considerable variability from the average (67 mandays per 100 student days) exists from brigade to brigade. It would be important to determine the reasons for this variability so that appropriate steps could be taken to improve efficiency according to the unique circumstances of each brigade.

¹Potential measures of resources, costs, and efficiency useful for monitoring purposes are described in our companion report, Shanley, Winkler, and Steinberg (1997). In general, these would include measures of student training days, school mandays required to deliver and support training, travel costs, and O&M costs for supporting training. Individually, these measures could provide ongoing oversight of resources and costs; combined, they would provide measures of school efficiency.

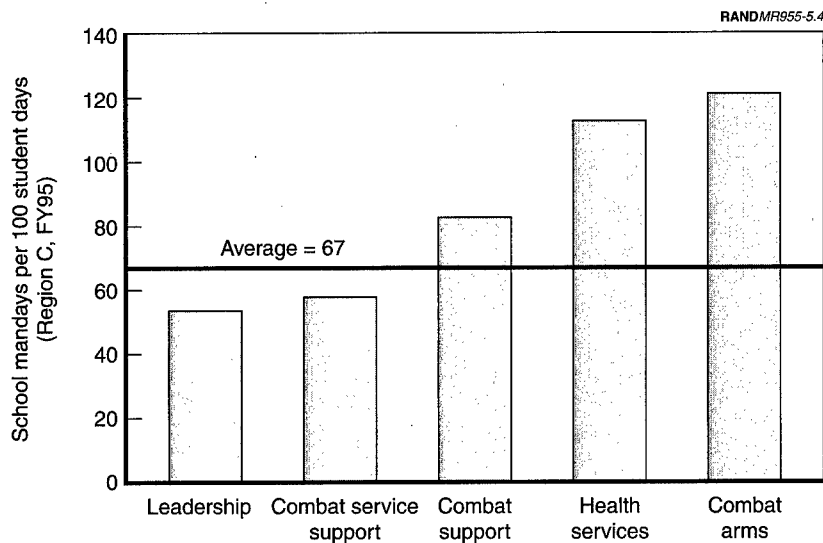


Figure 5.4—Comparing School Efficiency Across Functional Areas

EVALUATE TRAINING QUALITY

TRADOC's major focus throughout the implementation of the TASS has been on improving training quality through such measures as assessment and accreditation of RC training institutions, instructor certification, fielding of personnel (e.g., in school TDAs and for active-component "Title XI" personnel), and conversion of courseware from the former RC-configured versions to the new TATS-C. Hence, as implementation proceeds, we recommend that TRADOC monitor the status of these activities and provide regular updates.

In addition, our assessment also points to the value of what could be termed "customer satisfaction." We found that surveying instructors and school commanders was extremely useful in pinpointing problems with programs of instruction (POIs), courseware, and training

support and in determining their severity. Moreover, such information can also provide a basis for setting goals and measuring improvements as the Army takes steps to improve the quality and availability of courseware and training support. Such information could be collected in short, self-administered surveys completed at administrative drills, and the results could be compiled by TRADOC personnel who coordinate and monitor training in each region.

CONCLUDING OBSERVATIONS

Many of the recommendations summarized in this report have been discussed in working groups and General Officer Steering Committees governing the TASS. Many of the recommendations have been adopted. For example, in addressing training requirements, the USAR is working to implement ATRRS at the unit level; and the RC is emphasizing "select-train-promote" for sending soldiers to NCOES. However, policies are not yet in place to minimize personnel movements in an attempt to reduce training requirements.

In particular, many changes have been made to ATRRS to enhance its utilization and enhance its flexibility. Other modifications await action or resources. For example, planners cannot yet use ATRRS to determine the home location of students (for planning IDT). Prototype "resource screens" have been developed for USAR and ARNG courses, but a standard resource screen has not yet been resourced and implemented.

In other areas related to efficiency, the Army has made progress in deriving instructor and support needs from workload and in revising TDAs to increase flexibility. But the concept of "customized TDAs" is not yet fully accepted, and there is still a need for better information and improved systems for planning and tracking resource use and monitoring school efficiency.

To improve training quality, Total Army Training system courseware is being developed and distance learning is being implemented. Progress is being made in securing support arrangements for IDT. A centralized registry showing the names and locations of qualified instructors has been developed and implemented in ATRRS.

Finally, the Army has implemented a Quarterly Army Performance Review to monitor quota execution. In addition, TRADOC is keeping track of quality assurance mechanisms such as the development of TATS courseware, accreditation of schools, and the assignment of Title XI personnel. Currently, however, the Army is not monitoring the efficiency of school manpower or linking the management of training requirements to the output of the school system.

The key now is to focus the monitoring on the key measures of performance that bear on its output and efficiency and establish a comprehensive mechanism for providing such oversight.¹ As part of this, management of TASS should address issues that lie outside its traditional purview but fundamentally affect its performance—e.g., management of requirements and monitoring of school efficiency. Finally, continued effort and oversight will be needed to ensure that improvements are implemented and sustained and that TASS remains a focus of Army leaders. If these steps are taken, there is good reason to expect substantial improvement in performance and efficiency throughout the Total Army School System.

¹For example, ATRRS now provides a means for measuring many aspects of the TASS's performance and could be expanded to provide additional oversight capability.

REFERENCES

Buddin, Richard J., and David W. Grissmer, *Skill Qualification and Turbulence in the Army National Guard and Army Reserve*, Santa Monica, Calif.: RAND MR-289-RA, 1994.

Department of the Army Inspector General (DAIG), *Special Assessment of Reserve Component Training*, Washington, D.C., January 11, 1993.

Orvis, Bruce R., Herbert J. Shukiar, Laurie L. McDonald, Michael G. Mattock, M. Rebecca Kilburn, and Michael G. Shanley, *Ensuring Personnel Readiness in the Army Reserve Components*, Santa Monica, CA: RAND MR-659-A, 1996.

Shanley, Michael G., John D. Winkler, and Paul S. Steinberg, *Resources, Costs, and Efficiency of Training in the Total Army School System*, Santa Monica, CA: RAND, MR-844-A, 1997.

Sortor, Ronald E., Thomas F. Lippiatt, J. Michael Polich, and James C. Crowley, *Training Readiness in the Army Reserve Components*, Santa Monica, CA: RAND, MR-474-A, 1994.

Winkler, John D., Michael G. Shanley, James C. Crowley, Roger A. Madison, Diane Green, J. Michael Polich, Paul Steinberg, and Laurie McDonald, *Assessing the Performance of the Army Reserve Components School System*, Santa Monica, CA: RAND, MR-590-A, 1996.

Winkler, John D., John F. Schank, Michael G. Mattock, Rodger A. Madison, L. Diane Green, James C. Crowley, Laurie L. McDonald, Paul Steinberg, *Training Requirements and Training Delivery in*

the Total Army School System, RAND, MR-928-A, forthcoming in 1999.